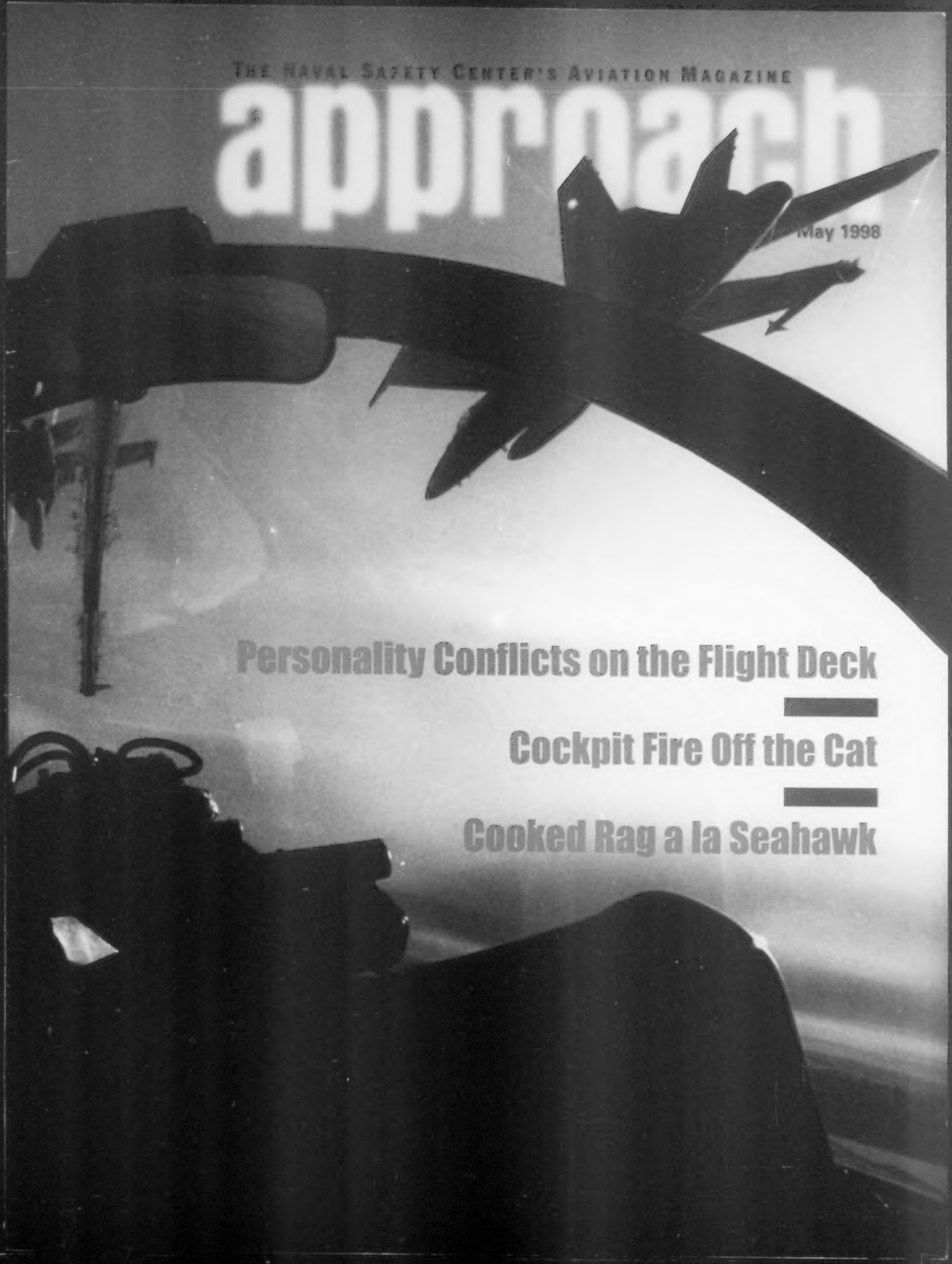
THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

May 1998



Personality Conflicts on the Flight Deck

Cockpit Fire Off the Cat

Cooked Rag a la Seahawk

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Volume 43, Number 5 May 1998

On the cover: Four Hornets of the Naval Strike and Air Warfare Center fly formation near Fallon. (Photo by Rick Llinares)

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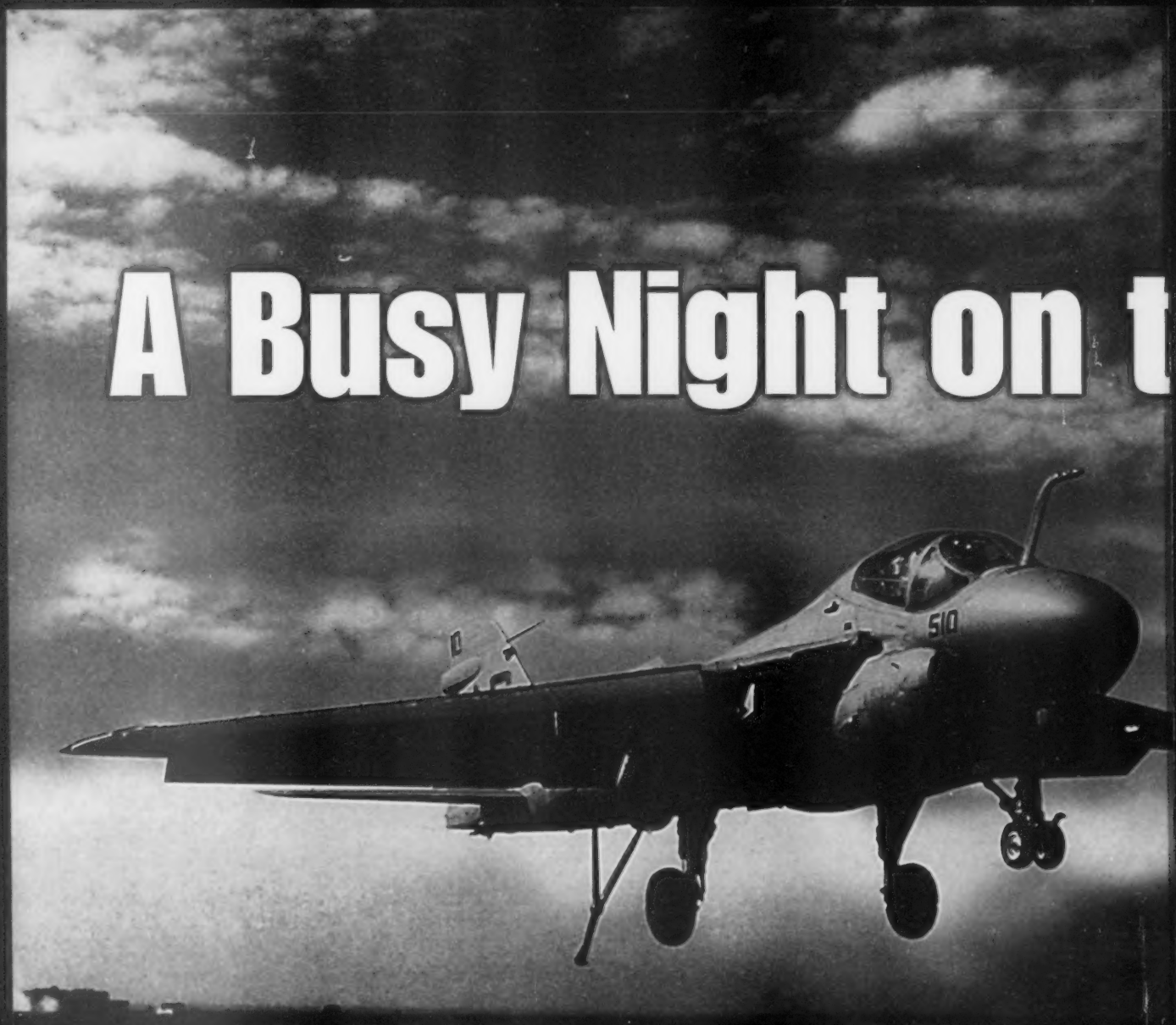
A Busy Night on t



My denial stage lasted as long as it took me to secure the left engine.

he Ball

by Lt. Eugene S. Young

WE WERE FOUR MONTHS into the cruise. My BN and I had a 1630 brief for an 1830 launch with a 2000 recovery. A day cat shot with a pinky recovery—what more could you ask for? Since we had pulled out of the Gulf, we had been doing a lot of SSC and mission tanking. Tonight, we had the pleasure of doing both.

The brief was standard NATOPS, including emergencies. Our squadron had recently incorporated the 20-degree flap modification to the A-6, greatly improving our single-engine climb rate. We painstakingly briefed how and when to use this added feature. Our ship-air-wing SOP was to launch with a setting of 20 degrees and recover with 30 degrees.

The launch, tanking and SSC went smoothly. We received our marshal instructions and proceeded to our assigned holding point. Our jet had a non-NVG cockpit with a red anti-collision light, and when I saw a flicker from the left-engine fire light, I hoped it was a reflection of the collision light in the mirrors. I stared at it for a while, and sure as the sun rises and sets, it flickered again.

My BN asked, "Hey, what's up?" My only reply was to point at the light. He soon understood what was going on. I went through the NATOPS procedures, which included shutting down the left engine, while he broke out the PCL. My denial stage lasted as long as it took me to secure the left engine. The light was now staying on longer, with less time between the flickering. With the ambient air temperature in the 80s and

Photo composition by John W. Williams

the external stores we had on the jet, our maximum fuel state on the ball should be 500 pounds. This number was particularly low, since A-6s have flamed out with as little as 700 pounds of gas and our wing's barricade state for blue-water operations is 1,500 pounds—ouch!

We planned to jettison the four drop tanks and the aerial-refueling store, then land as soon as possible. Electrostatic interference from our ram-air turbine made one radio unusable, which turned out to be a blessing in disguise. We talked to our squadron rep in CATTC and let him know what we had, what we had done, and what we wanted to do. He told us to find an area to get rid of the tanks.

I could only imagine what it would have been like to tank single-engine at night on an S-3.

Meanwhile, another A-6 below us in the stack was vectored to check us out. We finally found a clear area about 70 miles from mother. I pushed the emergency jettison button and instantly gained 20 knots. After we disposed of the tanks, the other A-6 joined, and we started back to the ship.

My playmate confirmed that all the tanks were gone, and that no secondary indications were visible. Even with all the stores gone, max trap was still below the wing barricade fuel state. Next thing we heard was the rep telling us that, having jettisoned the stores, our new planned fuel state on the ball should be 3,000 pounds. That was an easy suggestion to follow.

A note in NATOPS says it can take up to 40 minutes to dump below 6,500 pounds because the forward dump pump doesn't work on a single generator. We started at 7,600 pounds of fuel, and it did not take as long as we thought to reach 5,500 pounds. We figured that at 20 miles, we needed to have 4,000 pounds of gas, which was our first mistake.

We arrived at 20 miles with 4,000 pounds and coming down. At 12 miles, I deisolated and lowered the flap handle to 20 degrees. Nothing—the darn things did not move an inch. Now we were at 10 miles, and the ship called for us to dirty up. I was lowering the slats and flaps electrically, trying to fly the approach and trying to dump.

I got good indications at 30 degrees, but I could not get three good indications at 20 degrees. I settled for good 20-degree flaps, slats and a barberpoled stab. At four miles, the gear came down, and we were still dumping at 3,700 pounds. About this time, the rep passed that they wanted us to fly a slightly fast approach. My BN was hawking everything; my scan was going a mile a minute trying to keep the snakes out of the cockpit. At two miles, the dumps came off.

From the start of the emergency, I had decided not to trim out the ball. I was worried about blowing a tire on touchdown because the nosewheel would be cocked 60 degrees to the right, and I did not want to FOD my only good engine. I was working lineup hard, because every time I changed a power setting, I had to change the amount of rudder.

At three-quarters of a mile, we called the ball, "Intruder, ball, three point six, single engine."

We heard "Roger, ball,' from paddles, followed by "Wave it off," from CATTC. We waved off, brought up the gear, and the jet climbed like a champ. Next, we heard, "Five One Two, your signal is tank."

We looked at each other in utter disbelief. Luckily, paddles came up before we could say anything and said, "Turn them downwind. They were six hundred pounds above."

Whew! We had dodged that bullet. I could only imagine what it would have been like to tank single-engine at night on an S-3. I didn't touch the flaps, slats, or stab they were close to where I wanted them, and things were not going to get any better. We asked for a four-mile turn in. I wanted to make this approach as normal as possible.

At three-quarters of a mile we called the ball with 2,900 pounds.

Flying what I thought was a slightly fast approach (in fact, it was really fast), I picked up a left drift in the middle because I was not using enough right rudder. I started concentrating on lineup and dropped the ball out of my scan. I went high as a result.

The LSO called, "Right for lineup," then, "Power," which seemed odd since I was high. Later, talking with the LSOs, I found out that the "Right for lineup" call stepped on an "Easy with the power" call. You always give paddles what they want, so about the same time I worked off the fast approach speed, I adjusted my power and lineup.

I touched down past the 4-wire and much to my chagrin, we were airborne again. So much for not having to tank single-engine on an S-3 at night. Gear up, climbing through 300 feet and 140 knots, I moved my scan over to the ball. I had delayed using the rudders at touchdown, and now with full power, I saw the ball was full right. I fixated on the ball as I tried to re-center it. I now had full right rudder, full right stick, and we were still rolling left. I had focused too long and had kept the nose coming up in an effort to climb to 1,200 feet. My astute BN called, "Level off," and told me to lower the nose. The hardest thing to do at night is to push the nose over at 300 feet.

Meanwhile, CATTC was trying to tell us to go tank while we were fighting to keep the jet flying. By now, we were in a 30-degree left bank and still rolling when my BN asked, "Do you have it?"

"I think so," I answered meekly. We were very close to ejecting.

I leveled the wings at 200 feet. I looked back at the AOA gauge; it read 24 units, just before the stall warning, and airspeed was building up. We had things back under control. I cleaned up the wings, found the S-3 tanker and tanked at 210 knots. It took two tries, but the tanker crew did a great job. They were right where they were supposed to be with the basket out. I got in, and we made sure the wing dumps were on so that all the gas would go into the main bag.

Meanwhile, CATTC was trying to tell us to go tank while we were fighting to keep the jet flying.

After tanking, we descended to 1,200 feet, dirtied up, and for once, everything worked normally. We were feeling a lot better now and flew a good approach to an OK 2-wire.

We had had multiple emergencies and handled them like champs, but we did make a few errors. We used the "1,000 pounds over ramp fuel at 20 miles" rule. This number came from relying on our habit patterns and is a good number for two engines. We used just about half of that fuel. Also, we didn't trim out the rudder. I manhandled the rudder for about an hour of single-engine time. If I had trimmed it out, I could have spent less time and energy on the rudder and concentrated more on meatball, lineup, and AOA.

Finally, I fixated on a single thing too long off the bolter. It does not take long in an emergency to kill yourself.

Even though we made some mistakes, our crew coordination saved us. That's what teamwork is all about.

Lt. Young flew with VA-165. He is now assigned to VS-32.

Fleet Stuff

Anonymous

AS AN INSTRUCTOR, I had flown a number of ACM hops and thought I had seen everything. One day I was scheduled for a basic defensive-ACM sortie. The brief was thorough, and the lead included flight conduct and the obligatory ACM training rules. He was in a good mood, presumably since he knew his job was to saddle in on my student and make gun noises on the radio for an hour. Conduct was simple: slat checks, TAC turns, guns weave, two low-angle setups, blah, blah, blah. He ran through the training rules so fast that he sounded like the guy on the old FEDEX commercial.

We launched and headed for the MOA, completing slat checks and G-warmup turns along the way. I was so busy providing quality instruction that the first three runs of guns weave were a blur. However, the fourth and final one is crystal clear in my memory.

The shooter (lead in this case) reversed and took his snap guns-shot. After ending the engagement, he pulled nose high trying to maneuver to an offensive perch for the next run. My student asked, "Sir, what is he doing?"

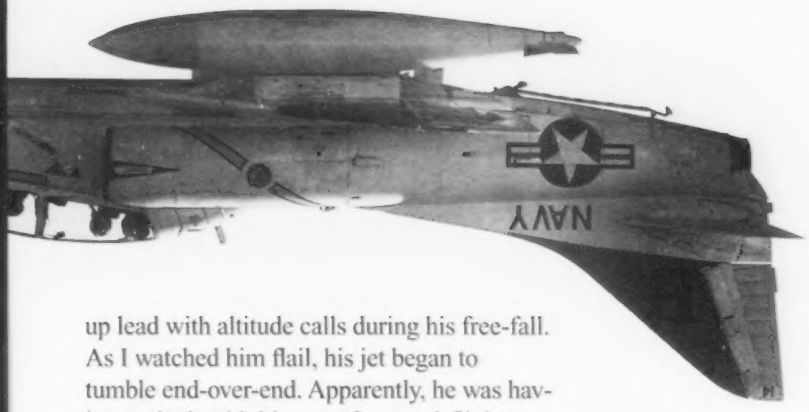
My fraternal instructor instinct made me say, "He's just demonstrating some fleet stuff."

In reality, I had no clue as to what he was doing. I watched as lead began some sort of canopy roll or displacement roll or… Well, anyway, he was rolling over top of us. It was when he was directly overhead, inverted, that I saw he had one slat in and one slat out.

"Hey!" I thought, "that's bad."

The A-4's slats are leading edge, high-lift devices designed to improve flight characteristics at high angles of attack. They deploy automatically at high AOA and should deploy together (within 1 unit AOA of each other according to FCF specs). When they extend asymmetrically, only one of the two wings has its flight characteristics improved. During flight, this situation can result in a slat departure (departure from controlled flight). In our case, that's exactly what happened.

His departure was a good one. My first thought was to get out of the way, so I took the controls and descended, intending to back



up lead with altitude calls during his free-fall. As I watched him flail, his jet began to tumble end-over-end. Apparently, he was having no luck with his out-of-control-flight (OOCF) procedures.

I started the altitude calls at 12,000 feet, then 10,000 feet. Remembering the A-4 OOCF procedures, I added more inflection and a stern tone to my next call of 8,000 feet. Below that, I was only guessing at the altitude.

My next call was, "You're at 5,000 feet!" I said it with such force that surely he knew I meant, "Hey, buddy, you'd better eject now, or you'll never live to defend yourself!" But a moment later, and how he did it I'll never know, lead managed to scoop it out and save himself and the jet.

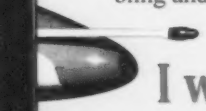
After he had climbed back into the MOA and reinstalled his seat cushion to its proper configuration, lead asked me if I was ready to press with the rest of the hop. Boy, did this guy love being offensive, or what? My student was speechless. I recommended we RTB.

Back in the ready room, we debriefed the student and sent him on his way. Then I asked the lead what had happened and why he hadn't ejected. He said he had been pinned against the canopy during the departure. He remained pinned while his aircraft was tumbling and couldn't reach either ejection handle. The aircraft miraculously recovered, and he was able to fly away at 3,000 feet.

I learned a few things from this incident and had a few things from previous training reinforced. Several mistakes can be directly attributed to the TRACOM environment. Your typical IP flies two to three hops a day, five to six days a week, which is very fatiguing. The repetitive nature of the business also can cause an IP to get bored and possibly overconfident. Perhaps the lead on this hop had those feelings when he tried his non-standard displacement maneuvers.

Repetition coupled with fatigue leads to carelessness, or laziness, or whatever you want to call it. I also learned something regarding my flight gear: it pays to make sure everything fits correctly and to strap in nice and tight for any type of dynamic flight.

One final lesson falls under the "inter-aircraft crew coordination" category. The OOCF procedures are very clear. When lead was out of control and passing 10,000 feet, I should have called, "Eject!" It's hard to use the "E" word on the radio, but no one can rely on aircraft to miraculously recover from OOCF at 3,000 feet.



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ort of canopy roll or displacement roll or...
nyway, he was rolling over top of us.

Our Tryout for the Jam

by LCdr. Logan Allen III

Well, there I was, sitting in my Tomcat, knee-deep in mud and 200 feet past the departure end of the runway. How could this have happened? We did everything we were supposed to but we still ended up in this predicament.

It started one sunny June morning with four JOs on a cross-country from NAS Miramar to NAS Oceana. At base ops, we spent 45 minutes on flight planning, much of it determining an alternate for Oceana. Occasional thunderstorms were forecast, and we wanted to be prepared. Several suitable fields in the area would be under the same conditions, so we chose Andrews AFB, which was forecast to be VFR when we arrived. With the DD175 and the Dash 1 in hand, we were well on our way to a good weekend in Virginia Beach.

We launched on time and headed for Tinker. We were not flying in section, since neither pilot was a qualified section leader. As we headed east, center told us we were not squawking, and they could not accept us. We quickly decided to return to Miramar to let maintenance have a crack at it. With luck, we'd be on our way again after a short delay.

Maintenance was waiting and sure enough, we were ready to go in a few minutes. But we ran into single-runway ops and a slew of arrivals. Tower couldn't release us before quiet hours, and we had to taxi back and shut down. We called Tinker to let them and our wingman know we would be a couple of hours late. A second call to our base ops and weather extended our flight plan and weather brief. We took off again two and a half hours after our scheduled departure time.

By the time we got to Tinker, the weather had changed to a couple of Weather Warnings west of Oceana, canceling Andrews as an alternate. All the bad weather was north of our planned route, so we changed our alternate and launched. Memphis Metro reported no change in the weather around Oceana and Cherry Point. The decision to continue as filed was an easy one.

An update over center's frequency for weather northwest of our position. We could see the buildups, and expected our course to keep us well clear of them.

After switching to another center frequency as directed, we got a vector of 060, despite Oceana's bearing 080 from our position. Our squadronmates were about 10 miles in trail and got the same instructions. At the time, I didn't think this was a big deal. I figured center wanted to bring us in to Oceana from the north. We had plenty of fuel.

We could see heavy rain to the north, as well as moderate stuff to the south. For the most part, though, it was clear in front of us. We were now IFR and descending from FL 370 to FL 240 in moderate turbulence. After another 5 to 10 minutes, we got a new steer of 360. The field now bore 120 from our position. We were picking up ice on the wings, with occasional flashes of lightning.

I was starting to worry. We were heading away from the field with 5,000 pounds of gas. Our bingo fuel to Cherry Point was 3.3K. After a quick discussion between aircraft, as well as individual crews, we asked for an immediate turn toward the NAS. I had not declared minimum nor emergency fuel, but we couldn't stay on our present heading much longer.

After several additonal vectors and a switch to approach, we requested direct Oceana. We had 4.5K remaining, and this would give us enough for the approach (maybe two) and still let us divert if needed.

After passing through heavy showers 30 miles west of Oceana, we asked for the weather there. We were surprised at the reply—VFR. The controller read our minds, commenting, "Hard to believe, isn't it?"

It was getting dark, but we were set up for a short final. Tower reported that a heavy rainstorm had just gone through, and no braking action had been reported since then. Our inter-cockpit conversation immediately turned to the location of the arresting gear as well as the length of the runway—8,000 feet. (The 12,000-foot strip was closed for repair.) We decided to land, test the braking action, and, if we had to, take the long-field gear.

The approach went smoothly, and we touched down with a centered ball. I started feeding in back stick right away, not wanting to get on the brakes too early. We were at 100 knots and just to the 4-board when I tested

aican Mud-Slide Team

the brakes. I didn't even feel the brakes tug as we kept whizzing down the runway. We were slowing down, but not nearly as fast as we should have.

I could see the yellow bullseyes for the arresting gear coming up, so I lowered the hook and told tower of our intentions. We were down to about 30 knots as we crossed the wire. The hook had been down 1,000 feet before, so there was no way we could miss it. At least that was what I thought.

As the wire disappeared beneath us, I waited for a reassuring tug that never came. With my heart in my throat, I stood on the brakes, hoping they'd catch somehow. My RIO called for me to try to ground loop it, so I engaged nosewheel steering and started kicking the rudders, to no avail.

There wasn't any overrun gear on this runway, so we were definitely in for the mud slide. I secured the engines before we left the runway, which probably saved the squadron a Class C mishap. There was little damage to the aircraft, just a lot of mud everywhere, including the intakes. The greatest damage was to my pride. It took a couple of days to get the F-14 out of the mud. A few borescopes later, we were on our way back home.

The lessons learned in this event are ones that we seem to hear over and over. First, never trust anyone completely. No matter how good the weather-guessers get, they still make mistakes. The severity of their error in this case became clear after we did a little research while awaiting the removal of our jet from the mud.

It turned out that while we were in Tinker, three new WWs had been issued that covered Oceana and its surrounding area. Neither Tinker nor Memphis Metro had these posted when we asked for information, even though the warnings were valid before we left and lasted until five hours past our planned landing time. Center had vectored us through two out of three of them as we approached Oceana. Armed with this information, we probably would have spent the weekend in Pensacola, and I would not be sharing my misfortunes with you. Live and learn.

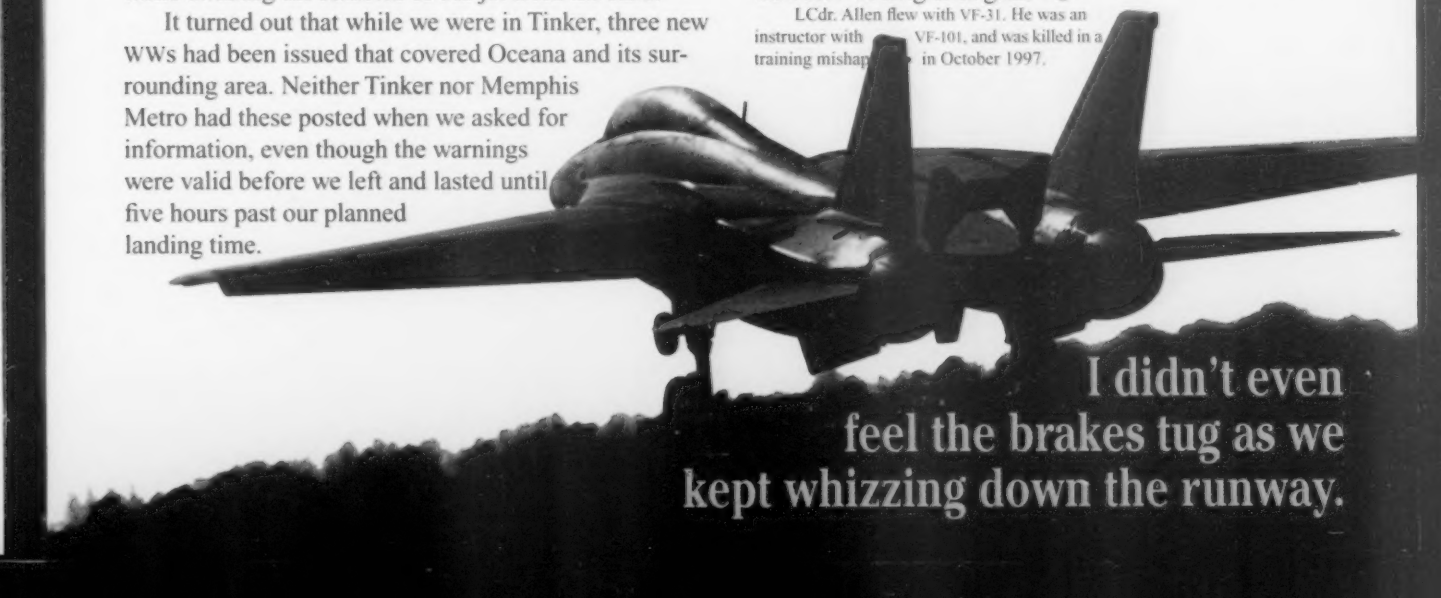
The last lesson, and you have heard it a hundred times, is keep all of your options open. For the most part, I believe we did so, but a few minor issues could have also prevented this incident. The first of these was a decision made without much thought. We landed with DLC engaged, which added eight knots to our approach speed. This may not seem like much, but it may very well have meant that we could have stopped in time.

Also, the decision to stay on the runway and take the long-field gear was, as they say, putting all of our eggs in one basket. Haven't you seen a jet hook-skip a wire at least once?

Maintenance had been recently done on the runway, and fresh asphalt had been applied under the wire, right next to where the old blacktop remained on the rest of the runway. In essence, this made a ramp for the hook. Dents in the asphalt a foot to either side of the wire showed where our hook had hit the seam, skipped up, then come down.

But not all the blame goes to the new asphalt. When we realized we had braking problems, we still had time to go to military and take it around for a short-field arrestment. That would have doubled our chances of catching a wire, either the short- or long-field gear.

LCdr. Allen flew with VF-31. He was an instructor with VF-101, and was killed in a training mishap in October 1997.



I didn't even feel the brakes tug as we kept whizzing down the runway.

BRAVO Zulu

BZs require an endorsement from the nominating squadron's CO and the appropriate CAG, wing commander or MAG commander. In the case of helo dets, the CO of the ship will suffice. A squadron zapper and a 5-by-7-inch photo of the entire crew should accompany the BZ nomination. Please include a squadron telephone number so we can call with questions.

Lt. Edward Miller
Lt. Pat Edmonds
AMS2 Rustin Lane
AMSAN Aaron Ortiz

HM-15

After the crew completed several maintenance autorotations in their MH-53E, AMS2 Lane (crew chief) noticed that one engine sounded unusual. He looked out the personnel-door window and saw the no. 3 engine's air-particle separator (EAPS) swinging free on its telescoping support arm. He immediately told the pilots.

Lt. Miller (HAC) leveled the helicopter and reduced speed while Lt. Edmonds (copilot) scanned the instruments for the No. 3 engine, looking for signs that it had been FODed.

Once below 60 knots, AMS2 Lane, secured by a gunner's belt and watched by AMSAN Ortiz (safety observer), opened the personnel door and secured the EAPS to the fuselage with a cargo strap.

After declaring an emergency, Lt. Miller landed on a beach-access parking lot. AMS2 Lane adjusted the latches to the EAPS, and with the help of Lt. Edmonds, thoroughly checked for FOD. Lt. Miller called home plate and received clearance to return home.

Capt. John Pryce
Capt. Brett Howard
Sgt. Mike Hunter

HMM-161

During blue-water operations in the Arabian Gulf, the crew of Greyhawk 24 was on a 4-mile CCA final to USS *Boxer* (LHD 4) when their CH-53E suddenly yawed to the right. Capt. Howard (HAC and PAC) saw that No. 2 engine torque had dropped to zero, and the engine temperature was rising.

Recognizing a compressor stall, he began immediate-action items while Capt. Pryce (copilot) secured the engine.

As he did so, the fire light and the light for the No. 2 T-handle flickered and then stayed on. Sgt. Hunter (crew chief) turned to check the cabin and saw smoke coming from the overhead under the No. 2 engine compartment. He grabbed the portable fire extinguisher and began spraying that area.

Capt. Pryce finished securing the engine and discharged the main fire bottle into the compartment. The fire light went out, and the smoke cleared.

Capt. Howard told HDC what had happened, switched to tower, then flew the helicopter to a one-mile final for spot 5. The crew determined they had enough power for a normal approach and went through the landing checks. Once on deck, they did a normal shutdown.

Inspection revealed the No. 2 engine had had a compressor stall, which ignited material in the engine compartment.

1stLt. Clayton H. Bollinger
Maj. Dale M. Smith

HMT-303

After the first hour of a check ride near MCAS Camp Pendleton, the crew of Atlas 05 flew to the TERF-maneuver area at 120 KIAS and 200 feet AGL. They suddenly heard a loud bang followed by a high-pitched engine noise.

First Lieutenant Bollinger (copilot in the rear seat) reported the No. 1 engine's Ng and Np were rapidly decreasing, with the No. 1 engine's torque at zero. No. 1 MGT was rising toward 900 C as Maj. Smith (HAC) quickly decided to retard the throttle on the affected engine.

The MGT decreased at first, but then rose toward 965 C as Maj. Smith brought the throttle to idle. The two Marines decided to shut down the engine. The copilot secured the engine, while the HAC made an emergency single-engine landing at a nearby field.

An EI revealed the Cobra's No. 1 engine had severe FOD damage to the initial stages of the compressor and moderate damage to the power-turbine section.

Off-Roading i

by LCdr. Mark Cordeiro

THE CREW WAS FLYING a 12-hour mission starting at noon, complete with an orbiting wire-out communications event and refueling from a KC-135. The flight hours weren't too painful, and the overall mission went well, except for growing tension between the aircraft commander (AC) and the 2P.

The trouble began when the aircraft was level at 5,000 feet in holding for runway 21L at Travis AFB. The airborne aircraft was waiting for the relief aircraft to launch, but RVRs of 1,200 to 2,400 feet were keeping them on the deck.

The weather had been deteriorating all evening, no surprise for Travis in January, but Metro said it was fluctuating from above to below mins. From 5,000 feet, it looked like a thin layer of fog was hanging right over the airfield. The AC had already briefed the approach, but there still was a discussion about what to expect and what the options were if we couldn't land.

The crew expected that once in the goo, the lateral visibility would be minimal at best. Metro reported RVR a little better at midfield, so we switched to the VOR approach to 21R.

The AC then said he wanted to go down to the missed approach point and "have a look." We briefed the new approach, but no one mentioned that runway 21R didn't have centerline lighting like 21L. For this reason, the left is the primary instrument runway and the runway the squadron used most of the time.

Without thinking about or briefing the difference in lighting between the two runways, habit took over the thought process. IFR, after a long mission and with tension on the flight deck, this proved to be a costly mistake.

The crew monitored the primary and backup instrumentation for the approach, and the approach was right on black line as the aircraft passed the missed-approach point. The AC called, "Field in sight," and started to transition to a landing attitude.

At around 50 feet AGL, the 2P called, "Go around!" From inside looking out, they saw a bright row of lights extending out the nose of the aircraft. Normal landing picture, right? The 2P didn't think so. He thought the approach was made only to take a look, and he knew the aircraft was off-center.

The nosegear came down runway lights, taking out AC had thought were the

n a Heavy Jet

The engines never spooled up for the go-around. At about 20 feet AGL, the 2P repeated, "Go around! Go around!"

The aircraft touched down normally, but the rollout was way too bumpy. At this point, the crew knew what had happened. They had landed exactly on the right edge of the runway, half on and half off. The nosegear came down exactly on the right runway lights, taking out the first three, which the AC had thought were the centerline lights. The aircraft then began drifting right, further off the runway, as the right main mounts continued to dig into terra firma, leaving a 2-by-2-foot ditch in the soft mud next to and halfway down runway 21R, killing two jackrabbits.

As the aircraft rolled out, it was forced back onto the pavement when the right main truck hit a perpendicular taxiway. Once stopped, the AC made a 180 to back-taxi, but stopped short of parking to inspect the plane.

The FE reported the underside of the plane was sprayed with mud and debris, a flap had been punctured, and the wheelwells were covered with hydraulic fluid. The crew shut down and called for chocks and a tow tractor.

exactly on the right the first three, which the centerline lights.

Inside the aircraft, gear was scattered all over, and overhead panels had fallen. Everyone felt a serious adrenaline rush. This unbriefed experiment proved the E-6A can make soft-field landings and earned this plane the nickname "784x4."

Pay attention to aircrew coordination in the airplane. This 2P was not aware that the approach would be continued to a full stop and was then ignored on his call to go-around. Preventing this type of communication breakdown is the very reason we have ACT. We constantly teach it in the command, but when the rubber hits the road (or the mud), it comes down to individuals choosing to listen and act.

"Go around" means just that. In this case, it could have saved a lot of money, trouble, and embarrassment.

It can happen to you. Attention to detail, especially after a 12-hour flight and bad weather, can pay big dividends.

Finally, respect your crew's opinions even if there is tension, conflicting personalities or communication difficulty. They may be trying to save your life, or at least your career.

LCdr. Cordeiro is a pilot with VQ-3.

The Hurrieder I Go, the Behinder I Get—Hornet Style

by Lt. John E. Burpee

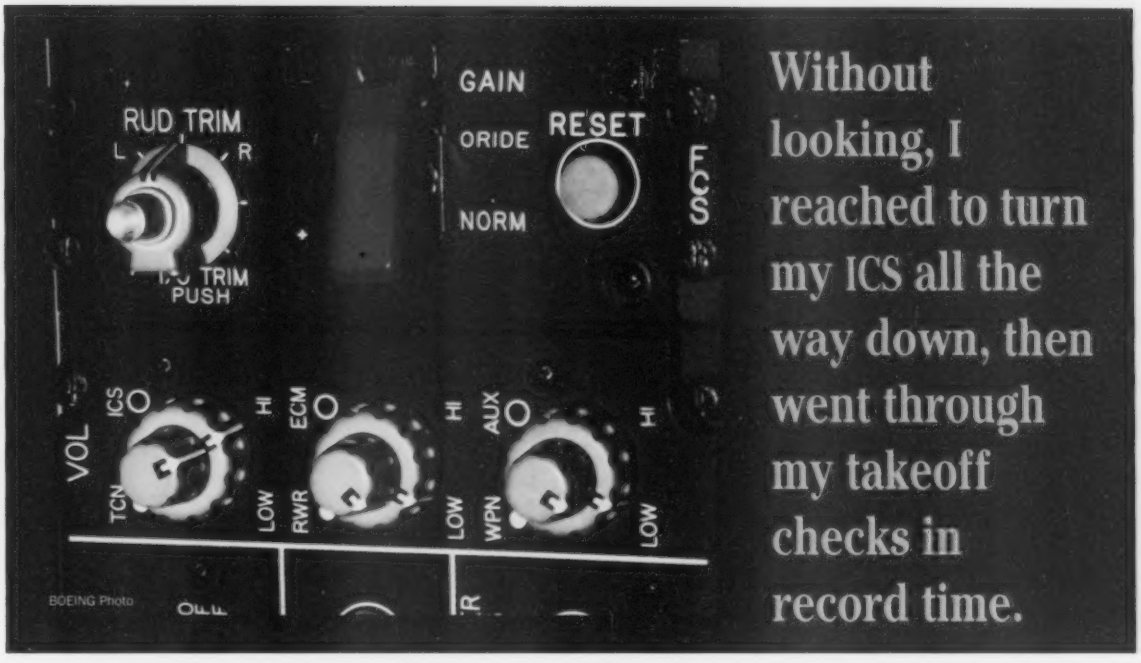
It WAS ONE OF THOSE DARK NIGHTS, the kind you genuinely hate to fly in, but one that sets the stage for many a sea story. The cat stroke was the same as the last 200, but the rotation and fly-away jammed my heart into my throat. Suddenly, my Hornet felt like it had overbanked and was diving toward the water.

Instinctively, I checked my altitude and VSI—I was at 125 feet and climbing. I grabbed the stick with both hands and stared at my velocity vector, which indicated I was climbing away, wings level, 10 degrees nose-up. What completely threw me for a loop was that I was ticking through headings at an alarming rate, which, of course, exacerbated my case of extreme vertigo. I reached for the ejection handle while checking my standby gyro to ensure I was indeed climbing. It agreed with the HUD, so I stuck with it. All of this happened in about a second and a half. By now, my HUD showed me at 400 feet, but I still felt almost inverted, and the headings just kept flying by. Another look at the standby instruments revealed my slip indicator ball was knocking on the side of the cockpit. I trimmed up the jet, which virtually cured my vertigo, and pressed on with my mission.

How could my jet have had such an enormous yaw off the cat? The truth was I had made it happen. When the Boss called for starts, I had been spotted on the 4-row. My start and pre-taxi checklists went normally, but just before breaking down the aircraft, a problem developed with my stores-management set (SMS). I had to shut down my right engine.

The launch was just about to start. I was sidelined just starboard of cat 1, near the nav pole (so that I wouldn't foul cat 2). The launch proceeded while I shut down the engine and discussed my problem with a troubleshooter over the ICS. In the Hornet, you have to turn up the volume of the ICS with a 1-inch rotary knob located next to the pilot's left hip on the console.

We tried several things to fix the SMS, and I was giving up on making the launch because we were two minutes to ramp time. Just then, some errant tron jumped back into line and the SMS came up.



The yellowshirts started waving wildly to break me down before my No. 2 engine was even back on line. I took a deep breath, signaled for the yellowshirt to hold, then got on with the rest of my checklists as quickly as I could. Moments later, I was taxiing toward cat 1, which was only 50 feet from me. Without looking, I reached to turn my ICS all the way down, then went through my takeoff checks in record time. It was only a matter of seconds before I was in front of the JBD. I had never felt so rushed.

So what went wrong? First, instead of turning down the ICS, I had grabbed the rudder-trim button, which is next to the ICS knob and shaped like it. Cranking it fully counter-clockwise commanded full left-rudder trim. No wonder I felt inverted!

Second, I didn't catch this error with my takeoff checklist. Time and again we learn that rushing makes us make mistakes. There is nothing like a flight deck that is running a little behind and a jet that needs troubleshooting to make us hurry.

The devil is in the details. There is no excuse for throwing knobs and switches without looking at them first. The blind cockpit test is meant for familiarity, not for practice. Furthermore, doing a checklist in its entirety also means doing each item correctly.

I should have stayed in the chocks until I was certain I had done the checks properly. Losing a sortie is definitely no problem when compared to the possibility of losing an aircraft.

"Trim" in the Hornet checklist should involve checking the trim of all the control surfaces, not just the stab 17 degrees up, which I did check. Hornet drivers, myself included, tend to focus on the stab in the carrier environment. Check all of the surfaces before every cat shot.

Lt. Burpee flew with VFA-147. He is now an IP with VFA-125

Swap-Pa
Open for

Cdr. Carroll F. LeFon

IT WAS A BEAUTIFUL summer morning in the warning area—the kind of day you live for. I had an F-16 for an early 4 v X, supporting a reserve Phantom squadron on their last detachment before transitioning to Hornets.

We had thoroughly briefed the mission and training rules. The visiting squadron had done well so far, their aging airframes and Key West liberty notwithstanding.

On the first run, I found myself in the lead bogey element, with the F-4 group on the nose at 10 miles. After trading shots inside five miles, I was about 300 feet lower than the lead Phantom, nose to nose. With more than 1,000 knots of closure, I bunted the nose to ensure the 500-foot separation mandated by the training rules, radioing "I'm low" (uselessly it turned out, since we had briefed separate frequencies). I was already looking forward to a big pitch into the vertical from the Phantom's belly at the merge to engage.

To my surprise, the big F-4 seemed to nose over as well, on a collision bearing. I pushed the sidestick-controller harder (it doesn't move much), and again called, "Low," with greater urgency, now floating in my straps. The Phantom just seemed to get bigger, more quickly. Finally, I pushed to a negative 2 G's, restrained in the air above my seat by my lap belt, but the Phantom pilot, who evidently had the same idea, was homing in on me like a missile. I was running out of ideas and separation at the same time. Collision seemed both imminent and unavoidable.

In desperation, I threw the sidestick all of the quarter of an inch it gave me aft and left with as much force as adrenaline can provide. I saw the wings and fuselage of the F-4 over my bubble canopy at about 50 feet. He was so close I could hear his engines.

My game plan changed from an aggressive vertical engagement at the merge to a 1-G extension for 20 to 30 miles. I was shook up.

Like me, you're probably wondering how two pilots, who presumably know what they're doing and who see each other from 10 miles out, could come so close to swapping paint. During the TACTS debrief, I stopped the tape at our pass and asked, as tactfully as I knew how, if the Phantom crew had felt comfortable with our separation at the merge. They shook their heads, wide-eyed at the separation displayed on the screen. They explained they thought they were low at three miles, and had also bunted to preserve the bubble (no doubt looking forward to an aggressive pitch into the vertical from below my aircraft).

I briefly toyed with the idea of going back to three miles and showing our relative alti-

int Shop Business

tudes, but restrained myself. Instead I let the rest of the engagement play out. Later, watching the tape by myself, I realized that 300 feet of vertical separation from three miles out was a pretty small peg to hang your life on.

The training rules that I had briefed say that in a head-on pass, you should maintain the established trend, but if no trend is established, clear to the right for a left-to-left pass. If you're on separate frequencies, exaggerate the turn away. Why hadn't we done that?

I might have been lulled by this particular squadron's competence. The fighter crew had made an error, albeit a small one, and perhaps we had all hoped for some small post-merge tactical advantage. Because the post-merge came within a hair's breadth of not happening, had been almost fatally stupid.

Fighter crews brief training rules routinely before ACM, and yet we keep breaking these rules, almost as routinely, with sometimes devastating consequences. Training rules are based on obituaries of aviators and the cost of untold millions of dollars in destroyed aircraft. It's time to get out of the routine of briefing the training rules and really think about them.

The next time you brief the training rules, stop on one and expound a bit. One example is the prohibition on missile attacks within 9,000 feet head-on and 20 degrees of the target's nose. I like to demonstrate to my wingmen that with the turning radii of modern tactical jets, you're almost never going to have 9,000-foot separation in a one-circle fight, so forget about missile attacks. Ensure separation and gain whatever advantage presents itself.

Nearly all the training rules lend themselves to this sort of real-world analysis instead of dry, pro-forma recitations. Everyone concerned, especially flight leaders, must insist on absolute compliance with the training rules. The best tool I know for this is written right there in the rules, under the heading "ACM shall cease when…"

The first reason on the list for a knock-it-off is when "Any training rule is violated." It doesn't matter whether the violation was intentional. Nothing will reinforce the point better than a knock-it-off.

Cdr. LeFon flew with VF-45 at the time of this story. He later flew with VFA-192, and is now the XO of VFA-94.

Phantom Horizon

by LCdr. Christopher W. Plummer

"CHRIS, I'VE GOT VERTIGO really bad!" my pilot exclaimed.

"So do I," I replied. "Fly your instruments."

As my eyeballs locked onto my attitude gyro, it took all my self-control not to put my palm on the yoke and push down hard. It was the worst case of vertigo I have ever had, a virtually incapacitating case of "visual misinformation."

Our air wing was aboard USS *Kitty Hawk* (CV 63), operating south of Hawaii on a RIMPAC exercise. I had been scheduled for a double-cycle, night AEW mission, which would end with a good-deal trap-cat-trap for night currency. The moon was hidden behind an insidious scud layer at 1,500 feet. I was flying with a solid, cruise-experienced CAT I and thus would be spared the white-knuckle-nugget-sleigh-ride down the chute to the nonskid.

We shot off the carrier and climbed toward station. Except for the spectacular heat-lightning over Mauna Loa, the flight was developing into just one more mission for my logbook. Several uneventful hours later, I checked into marshal, and to my chagrin, CATCC had moved the marshal radial 90 degrees farther away, which put us in a buster situation to make our scheduled push time.

Checking our ground speed en route to holding, I figured we'd make it with two minutes to spare. Perfect! We pushed our Hummer over from 25,000 feet, descending to 6,000 feet. On the way down, we started to wend our way around some towering clouds. Passing through 7,000 feet, nearing our holding fix, I gradually developed an uneasy sensation. I felt as if my Hawkeye was gradually moving to a vertical position.

With adrenaline kicking in, I stared at the attitude gyro and checked the VSI, altimeter and AOA. As you read at the opening of this story, the pilot at the controls exclaimed that she had a bad case of vertigo.

My mind raced. It now felt like the aircraft was more than 60 degrees nose-up. We were about to depart and fall into the black waters below. We were both experiencing the same sensations, which indicated we were really climbing, or there was some external, visual cue affecting us.

"Scan for your life," I thought.

A long-forgotten flight instructor barked in my ear, "Trust your instruments, Ensign Plummer!"

If we were 60 degrees nose-up and climbing, how come we weren't in rudder shakers? How come the altimeter and VSI showed us in a slow descent?

"Amy, fly your instruments," I said.

I buried my head in the cockpit and hawked the dials, but it now felt like the aircraft was 90 degrees nose-up. For what seemed like an eternity, I tried in vain to shake off the nose-up sensation.

Suddenly, I had the blood-chilling sensation of a "ground rush," and I felt as if we had hit the deck. In an instant, I realized the aircraft had just entered a cloud as the Hawkeye started to get knocked around. Despite the moderate turbulence, the cloud obliterated any external visual references, and my internal gyro began to recage.

In three to five seconds, I felt the nose of the aircraft come down to straight-and-level. The pilot said she was coming out of vertigo, too. We continued to our holding point, did a 90-degree whifferdill, and pushed on time, still feeling a little disoriented.

Below the cloud layer, it was a black hole literally. The carrier looked like it was floating in space with absolutely no horizon. We received good needles and trapped. Then we headed for the catapult and were airborne once again.

After an airborne crew-switch, I received a short hook to final for my night trap. I still felt a little bit woozy and concentrated on a good instrument scan.

During our crew debrief, we put the pieces together. Everything had been fine until a minute or two before we entered the cloud as we headed for marshal. We figured what appeared to be a horizon was actually the base of an approaching cloud. As we neared the vaporous specter, the cloud's base began to slide under the aircraft's belly, creating the illusion that we were in a steep climb as the horizon moved lower and lower under us.

Once inside the cloud, the illusion vanished, along with the false horizon.

With more than 3,100 hours, a good deal of it in instrument conditions, I thought I had seen it all. I had never felt anything close to the incapacitating disorientation I felt that black night at a relatively low altitude over the Pacific.

We were about to depart and fall into the black waters below.

Only discipline, borne of solid instrument training, kept me from making the fatal error of trusting my instincts and flying into the water.

LCdr. Plummer flies with VAW-117.

These aviators fell prey to a classic visual illusion that resulted in a virtually incapacitating case of visual misinformation. In this description of a perceptual illusion, the author refers on several occasions to experiencing "vertigo." Although I believe most aviators would know what he means, others might be confused. Let's make sure we're all on the same sheet of music.

From an aeromedical perspective, vertigo refers to a disabling sensation in which the individual feels he is spinning or that his surroundings are moving. Although disoriented to his true position in space, the author does not describe the sensation of movement that would classically constitute vertigo. However, the sometimes subtle differences between incapacitating visual illusions, spatial disorientation, and vertigo are not what is important about this story.—Capt. James R. Fraser, MC, Naval Safety Center Surgeon.

Moneymaker or Money Loser

by Ltjg. Manual Reyes

THE FLIGHT STARTED OUT just like any other hop around Oahu, with the exception that it would be a low-level flight followed by my H2P check flight in the training area around Wheeler Army Airfield. I had just completed my NATOPS check flight at my first fleet squadron, so I was ready.

The HAC had been the OinC of a LAMPS Mk-I and Mk-III det. We had flown together several times. Having been at the squadron six months and preparing for deployment, I was looking forward to completing this last check before sailing over the horizon.

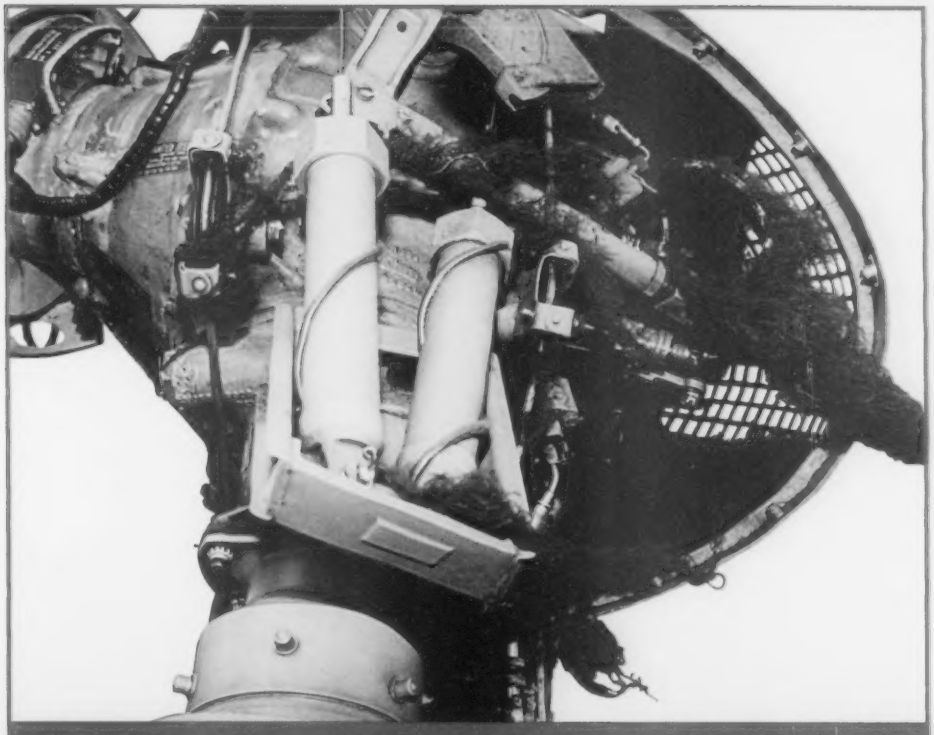
We briefed, preflighted and manned up. One of our two AWs also would be getting his NATOPS check. The other crew member was a flight-qualified photographer's mate. This hop was going to be a moneymaker for our operations department.

The low-level portion had us at 200 feet AGL, flying over the Kooloau Mountain Range at slow speed. Afterward, we proceeded to Wheeler Army Airfield for some fam work. After a normal takeoff and transition forward down the runway, we felt a high-speed vibration. Both the HAC and I called out, "What was that?"

I remained at the controls, while the HAC ordered, "Put her down."

There was enough runway ahead of us do, but as I checked the tail-rotor pedals for control, the remaining portion of the runway where we could safely land slipped away from me. My only option now was to take her around. On downwind, we made the "PAN" call to tower and were cleared to land as we turned base leg. Again, we felt the high-speed vibration.

We landed, and the HAC and senior AW unstrapped to check for damage. The junior AW, staring out the port side window, told me the HAC's jaw had dropped from what-



When I inspected the cowling covering the tail-rotor gearbox, I saw what looked like fine down streaming out...

ever he saw. The crew strapped back in, and we taxied off the runway before shutting down.

When I inspected the cowling covering the tail-rotor gearbox, I saw what looked like fine down streaming out the cowling. I immediately remembered stories of birds making nests inside H-60 tail-rotor cowlings, but that could not possibly be the case with this aircraft; it flew regularly.

We got a workstand from the Army unit and removed the cowlings. We discovered a black rag had wrapped around the No. 6 tail-rotor driveshaft between the intermediate and tail-rotor gearboxes. As the rag whipped around the driveshaft, it wrapped itself tightly around the tail-rotor control cable, tearing the Teflon coating from the cable close to the pulleys. We commented that we were fortunate the rag had not been a metal tool, or that it didn't happen during our low-level flight.

There are several morals to this story. One, if you have a problem with the aircraft, the best place to be is on the deck, not trying to troubleshoot while the landing area slips away under you.

Two, daily and preflight inspections are the most mundane portion of a flight, but if you don't do them thoroughly, sooner or later, you'll regret it.

Three, strong tool-control and hazmat programs are vital. You must account for the rags you use. Imagine something as simple as a rag causing a very expensive aircraft to crash.

Fourth, we discussed the possibility of standardizing the type and color of rags to better see them in the aircraft. In this case, a black rag was in a dark place.

We re-learned lots of lessons rather cheaply that day. I guess that flight really was a moneymaker.

Ltjg. Reyes flies HSL-37's Det 8 on board USS *Leftwich* (DD 984).

Just Me and

by Lt. Tim Gamache

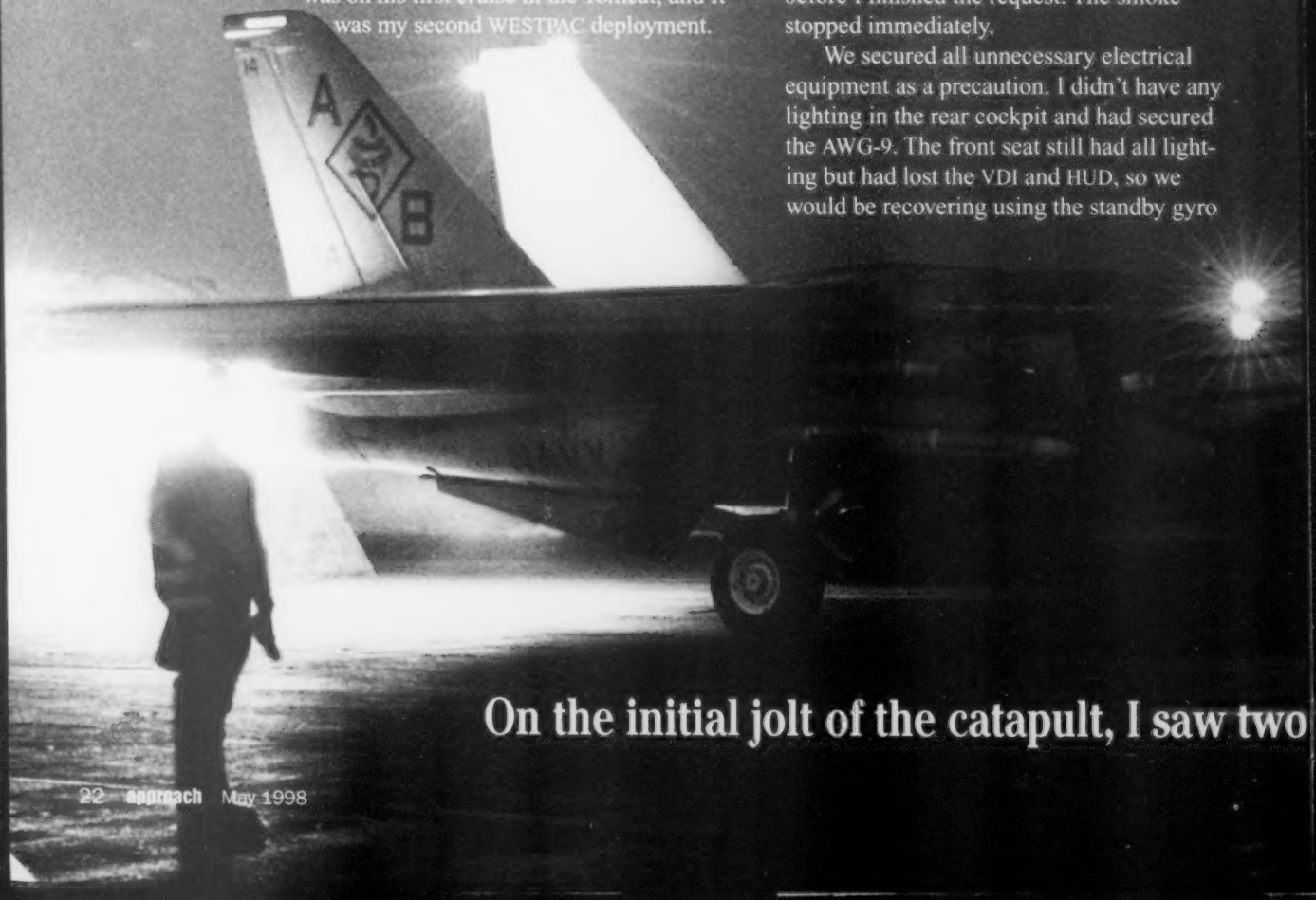
IT WAS THE AIR WING'S last night of CQ after being extended in the Northern Arabian Gulf and losing visits to Perth and Hobart. As usual, Saddam Hussein had kept a carrier from hitting good ports, but for us "baggers," that meant flight time, traps and an overly optimistic hope for a MiG kill.

My pilot was not my regular frontseater, and we were scheduled for a pinky launch for a CAP. We had flown together during workups and cruise, and felt comfortable with our crew coordination. He was a cruise veteran who had transitioned from A-6s and was on his first cruise in the Tomcat, and It was my second WESTPAC deployment.

All catapult procedures went without a hitch, and my pilot turned on the lights for the cat shot. On the initial jolt of the catapult, I saw two flames shoot down the left side of my cockpit coming from the No. 2 circuit-breaker panel. The first words out of my mouth weren't the greatest selection: "Damn, we have a fire!"

An immediate "What?" came from the front seat. My pilot set the fly-away attitude, at which point I looked back at the circuit-breaker panel to see smoke coming from it. I told my pilot that we had an electrical fire and to secure the generators, which he did before I finished the request. The smoke stopped immediately.

We secured all unnecessary electrical equipment as a precaution. I didn't have any lighting in the rear cockpit and had secured the AWG-9. The front seat still had all lighting but had lost the VDI and HUD, so we would be recovering using the standby gyro



On the initial jolt of the catapult, I saw two

My Shadow

with no ILS or ACLS. Although not optimum, we were sure the recovery wouldn't be difficult as long as we could see the horizon.

We still had some daylight left to work with, but we'd have to hurry with the recovery. We called CATCC to describe our situation and to tell them that we had to recover within 10 minutes so we could still see the horizon. They asked if we were requesting another aircraft to lead us on a section approach. We replied that we did not need a section approach as long as we recovered before dark. They then told us to proceed overhead at angels 13 and to dump to recovery weight.

Once we got to a fuel weight that would put us max trap on the ball, we called approach and said we were ready to recover. We got that dreaded response, "One One Zero, stand by," then silence. I kept quiet for as long as I could, but I just couldn't wait.

"Approach, One Ten, we need to recover as soon as possible."

At that point, our CATCC rep came up, and we repeated our need to get down ASAP. As daylight faded, we pleaded with CATCC for an immediate push from overhead. They continued to delay us and kept asking if we needed a wingman. After telling them three times we could push as a single as long as we pushed immediately, they decided to start us from overhead.

As we descended out of 13,000 feet, we realized we had our work cut out for us. There was no horizon at sea level, and my pilot had only a standby gyro for attitude reference. I was in the dark in the back seat.

PH2 Todd P. Cichonowicz

flames shoot down the left side of my cockpit...

To make matters worse, CATCC wasn't giving us much information, despite my constant requests for close control. We pressed on, making a very intense, self-contained CCA down to one mile where we picked up the ball. My pilot flew a smooth pass to an OK 4-wire.

Happy to be on deck, we first debriefed with the LSOs, who said we had had no external lights either. Our CAG paddles, a Tomcat pilot, had been the controlling LSO. He had coolly waved our mere shadow of an airplane, giving timely calls to put us in the wires.

After our LSO debrief, I went to CATCC to find out why they waited so long to push us when we had clearly stressed the importance of pushing with a horizon. To my astonishment, the CATCC officer said they couldn't make a hole for us because they had already pushed aircraft out of marshal.

I asked him why they couldn't make a hole for an emergency aircraft. He replied that he hadn't thought we were an emergency. He also said that they had delayed because they had been trying to coordinate joining a wingman on us as we had requested. They were surprised when I said we had told them four times that we wouldn't need a wingman if we pushed immediately. At that point, I was wondering whom I had been talking 20 minutes earlier.

Changing the subject, I stressed the importance of close control on the approach when a pilot reports problems as major as ours. They didn't seem particularly interested. Frustrated with the response from CATCC, I went to debrief with my pilot.

We discussed the major lessons learned. My first mistake was the way I had reported our electrical fire. Saying "Damn, we have a fire!" probably wasn't very soothing on the cat stroke. We should have requested a wingman immediately. At first, we felt that CATCC would push us, and we would land before dark. Therefore, we didn't need to waste time having someone join on us. In hindsight, we realized it would have been better to get someone on our wing immediately in case our push was delayed.

If you rendezvous before dark and you wind up not needing a wingman, what have you lost? You are still much better off than delaying a join-up and then trying to rendezvous in the dark with no external lights. Flying wing on another Tomcat flying needles would have greatly reduced our workload and would have given paddles reference lights until he saw us.

The way I dealt with CATCC could have been more efficient as well. I felt I had clearly stated the importance of an immediate push and the extent of our system degradations. When I debriefed with CATCC, I realized they hadn't understood just how much help we needed, and what kind. Conversely, I felt that CATCC didn't cooperate as well as they could have. I told them many times we needed a closely controlled approach because we had neither needles nor bullseye. They rogered those calls but failed to give us any control for an uncomfortable amount of time. Our CATCC rep confirmed we had clearly informed CATCC of our needs for a timely push with close control, but he was in the dark as to why they had so much trouble understanding our situation.

Finally, the fact that we weren't aware of our lack of external lights was disappointing. I always stress the importance of copilot duties, and I spend much of my time outside the cockpit checking every configuration change. Despite having confirmed our wing, slat, and DLC positioning on the landing checks, I failed to notice our lack of external lights. This information could have been extremely helpful to our LSO when we called the ball and all he saw was a shadow.

Although this flight lasted only 25 minutes, I learned more from it than a one-hour NATOPS simulator.

Lt. Gamache flew with VF-213. He is now assigned to VX-9.

Fun and Games With My Tacan

IT WAS CJTFEX, and our carrier was the centerpiece of operations that included nearly 60 combatants from three countries. The admiral's staff was firmly ensconced in every available stateroom and office space on the 0-3 level, and their influence was felt everywhere. The enemy had been flying frequent simulated attacks against the ship. As a Hornet pilot, I was assigned missions including Alert 7 DCAs, SSCs and night strikes with night-vision goggles to combat-SAR. There were no complaints from the ready room as our monthly flight hours shot up. However, some flights were less enjoyable than others.

This particular sortie was scheduled as a night, double-cycle DCA hop. Double cycle always appeals to any flight-hour-hungry JO, but I had yet to experience one at night. I didn't know how to feel about that one. I would log some more time on goggles and that was good, but it meant a trap at 0020 after three hours in the air.

I launched at 2100, flying wing on one of the more senior lieutenant commanders in the squadron. We headed out to the CAP station and set up a racetrack pattern oriented toward the enemy coast. We were both flying with NVGs, and boredom was starting to become the only enemy.

The GCI controller onboard a cruiser was even losing his ability to distract us with commercial traffic up and down the coast. Mid-cycle, we staggered to the KC-135 to get the first of two installments of gas that we would need to make our scheduled recovery time. We continued the CAP mission until I told the controller I was leaving station to get more gas. The controller calmly said that the KC-135 had already departed for home station. This wasn't a big deal to him, but it meant that I was going to recover with too little fuel.

After several requests, the guys back home finally sent an S-3 my way, and I was

...after cycling my tra
I realized marshal had

able to take enough fuel to get me over the top for the recovery.

When it was time to recover, my flight lead and I turned toward home and began checking in with the battlegroup. I switched my waypoint from my CAP point to our launch position and checked it against the tacan, which was having a hard time locking onto mother.

The two positions weren't as close as I was used to seeing, but we had been airborne for more than three hours, and I assumed the variation was within the realm of possibilities. Besides, Red Crown and strike were calling, "Radar contact," and everything seemed normal.

We switched to the marshal frequency and copied holding instructions. Marshal asked us to "recycle our parrot," but that was nothing odd. Marshal often requested such action, which was then followed by a reassuring "radar contact" call. But after cycling my transponder several times, I realized marshal had no clue where I was. My radios started to get scratchy, and I realized marshal could not hear my lead on the radio, either.

I was trying to reach my lead on the back radio when marshal called me on the front radio and asked me something funny: "Can you lock up your lead?" I immediately did so and found that he was at 1,000 feet, 4 miles in front of me on the CV-1 approach. I felt better for a moment, but then I lost comms again.

I thought, "No problem. I'll just fly the approach, get an ACLS lock-on at six miles, and trap with cut lights for a roger ball." The strange fact that both my lead and I had lost comm at about the same time failed to register with me. I dumped about 400 pounds of gas to be at max trap on the ball, leveled off at 1,200 feet inbound to the carrier and maintained a radar lock on lead (I love this jet).

Passing 6 miles, I didn't get locked up by ACLS, so I stayed at 1,200 feet. My ILS had been griped down, so the lack of Bullseye wasn't an immediate concern. I followed my tacan and eventually arrived over the tacan station. It was a ship, but it certainly wasn't mother. Now, I was really feeling uncomfortable.

I was NORDO, low on gas, and mother wasn't home. I started squawking 7600 and began to climb. Some of the thoughts I had back in the training command returned. I remember my first carrier qualifications in T-2s when I flew out from the coast and headed toward a carrier that the instructors promised would be easy to find. It was the first time I had flown over the ocean, and as I looked east I imagined what I'd do if I had no lead safe and I couldn't find the ship. "Panic" was the first thing that came to mind. Since those initial trips out to sea, I have come to realize just how wonderful a piece of gear the tacan can be.

A radio call from lead was good to hear, but what he said next was disconcerting. He had copied the ship's position from another aircraft, plugged it in to the INS, and realized it was 90 miles away! I checked the tacan channel (which I thought was correct) for about the three millionth time and it was still pointing toward the ship I had just overflown.

sponder several times, no clue where I was.

Did we have the gas to make it home? Did we have the gas to make it anywhere? I was looking at about 5.5, but we were flying blue water operations, and the nearest divert field was more than 250 miles away. We started a bingo profile back to mother, hoping all the excitement was over for the evening.

Fuel is always a concern when you operate from the ship, but this hop was proving to be ridiculous. I learned later the controllers in CATCC were starting to think my lead and I had had a midair. They didn't get us on the scope until someone decided to expand the scale beyond 40 miles! There were no tankers airborne because it was the final recovery of the night, and my state was rapidly dropping below tank state as I approached centerline, the next-to-last aircraft to trap that night.

I landed squarely on the first wire I came to with 2.4K in gas, 4.1 hours of flight time, and a bone to pick with our battlegroup supply ship.

CAG cleared up the tacan story for us in his stateroom. Remember the admiral's staff I told you about? Well, somebody had come up with a great deception plan to protect the carrier: have the oiler radiate the CVN's tacan channel at high power while the carrier kept it on low. Works great!

Lt. Dodick flew with VFA-83. He is now assigned to VX-9.

Letters to the Editor

Re: How to Fly VFR in France *(Nov '97)*

APO AE 09630—As an army aviator, I read *Approach* regularly. I have flown UH-1Hs throughout Europe for eight years from northern Norway to eastern Turkey. Because of the UH-1H's limited IFR capability, we usually fly VFR. However, many times in low-VFR conditions, I have learned it's prudent to navigate off a JOG (1:250,000) chart and use a TPC (1:500,000) for aeronautical references.

We don't have GPS, and in the mountains of northern italy, Austria and Germany, we experience intermittent VOR/NDB reception. Using JOGs has helped me many times when I'm low on fuel or in poor weather.

When I'm planning my flight, I also call individual en-route weather-reporting stations. I have found there are vast discrepancies between their METAR/TAF and what the Air Force gives me on my Dash One weather brief.

CW2 Matthew Newman, USA
6th Aviation Company

Into th and... B This W Cold!

by LCdr. Ed Hobbs

OUR A-6 QUALIFICATIONS for Search Radar Terrain Clearance (SRTC) had expired. Requalification consisted of a day, low-level bomb mission in the mountains followed by the same low-level at night. Temperatures were in the low 30s with gusty winds, but visibility was seven miles. It seemed the perfect day for a low-level. Our route was completely over land except for a river that ran through the target area. Dry suits were not required and definitely not desired.

We taxied to the radar warm-up area to test our SRTC display only to find that it was down. Now that it was impossible to achieve our SRTC qual, we decided to change our flight plan and fly straight to the target for bombing practice.

We checked in with the target controller and started our runs. Descending to 500 feet at 450 knots, I acquired the target on radar, and we made our first drop.

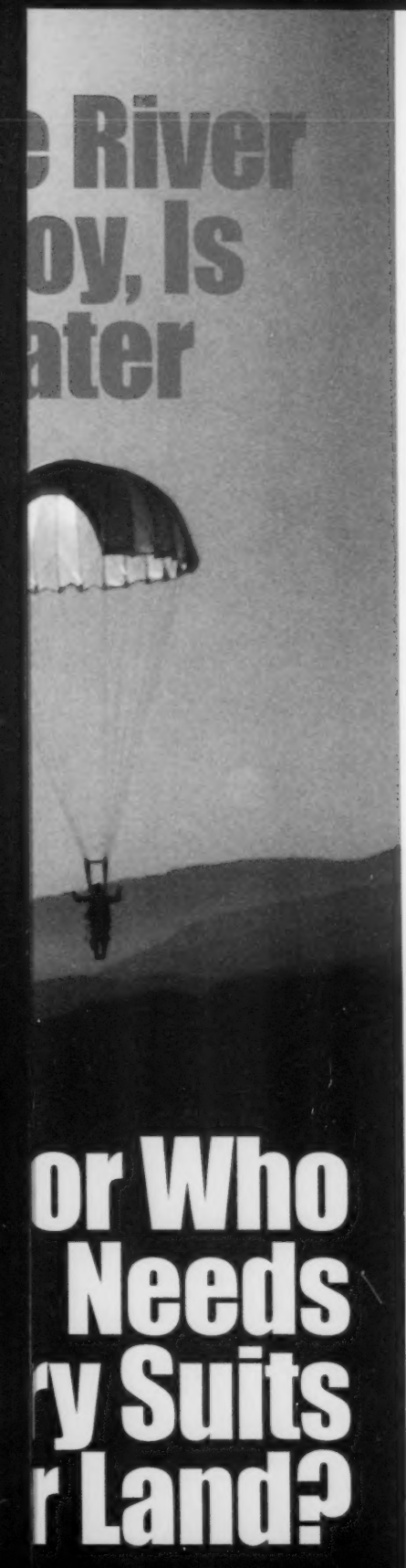
"Thirty feet at six o'clock," the controller said as we pulled off target and headed downwind. I felt it was a fair hit, and I was sure I could do better on the next run. About a minute later, as we were turning in from six miles on a straight-path attack, we added power and began accelerating to 450 knots.

With no warning, we felt an explosion, and the aircraft began rocking. Seconds later, we lost all electrical power. My pilot fought with the controls, but the aircraft would not respond. My mind raced through the millions of places I'd rather be at that particular moment.

We deployed the ram-air turbine to restore electrical power, but before we could breathe a sigh of relief, three fire lights on our instrument panel told us we had a serious problem. I looked outside for secondaries. I turned as best I could and gazed at the aft portion of our aircraft. A large fire had engulfed the horizontal stabilizer. That was enough of a secondary indication for me.

Decisions were coming easy now. I looked at my pilot and yelled "Eject, eject, eject!"

I pulled the lower seat handle. The seat fired, and I was on my way, tumbling in the airstream. A second later, the seat turned upright, and the parachute deployed. Thankful I had survived the ejection, I glanced down to see where I was. Having been to remedial swim twice, I was in the worst possible place: right over the river that ran through the target area. That dry suit would have come in handy. I inflated my LPU, then tried to deploy the raft. "Where's the handle?" I wondered. For some rea-



son, I couldn't find it. The water was getting close, so I went through the rest of my post-ejection procedures. I removed my mask and executed my four-line release, then I found my koch fittings.

I still couldn't find the handle, and it was time to get wet. I decided to take care of my raft after I got situated in the water. I hit the water and released my left koch fitting. Man, the water was cold. But considering how hot the Intruder was getting, I felt it was a fair trade. For some reason, my right hand wasn't working too well, so I released the right koch fitting with my left hand. I went back to locating my raft.

"If I release one of the lower koch fitting, maybe I can find the handle," I thought. At that point, a few stray brain waves kicked in, and I accidently released both lower koch fittings. My seat pan and raft sank gracefully to the bottom of the river. The river banks were too far for me to swim to, and the current was too strong, but I was certain I would be rescued shortly.

Thirty-five minutes later, I was still in the water. My hands were numb.

I could see orange smoke in the distance. It was a huge relief to know my partner had survived. I assumed he was signaling a rescue unit, although I could not see it myself. My first instinct upon seeing the smoke was to break out my flares, but the river had transformed me into a popsicle. I couldn't even feel the zippers on my gear, much less use them.

A Coast Guard helicopter finally arrived and hauled me out of the river. In the helo, I discovered I had severed two tendons on the back of my right wrist, and I had hypothermia.

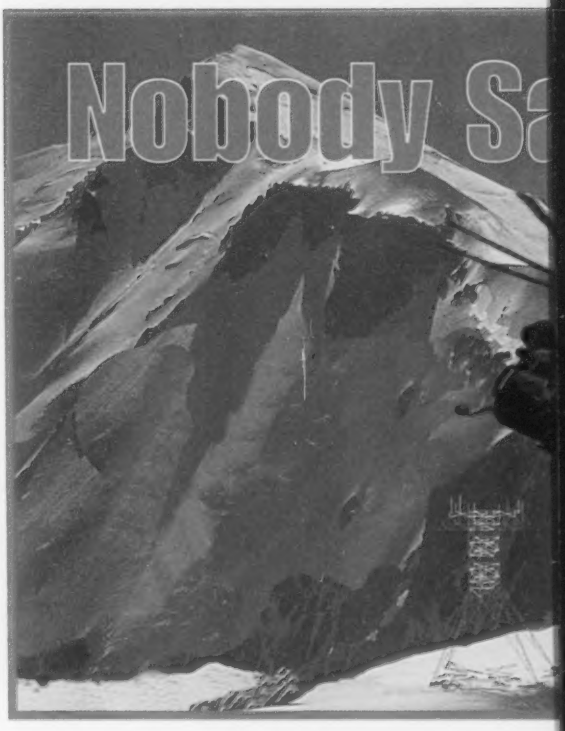
I had made many mistakes. My wrist injury could have been less severe if I had been wearing gloves.

Although my injured hand contributed to my problem, it was no excuse for not deploying my raft. And, for obvious reasons, don't lose your seat pan in the water.

Finally, our survival gear is tied to our vests. In cold weather, I recommend immediately pulling the survival gear out so it is ready for use. My pilot did this and said that since he could see his flares and radio, he could use them even though his hands were also numb from the cold.

If this mishap had happened at night or in IMC, or had my rescue been delayed longer than the 45 minutes I was in the water, the ending could have been tragic.

LCdr. Hobbs flies with VS-30.



by Lt. Robert Moss

"Power lines! Power lines! Climb!"

Definitely not the way to start a "milk run" home. But maybe it was thinking "milk run" that caused the problem.

The event had started the night before. On detachment in Bari, Italy, we got a call from home guard telling us to get back pronto. We had to be back in Sigonella, 2.5 hours south, by 1130 the following morning to be the turning backup for a VIP mission. The entire det—two aircraft and 29 people—had to close up shop and be airborne in 16 hours and, our caller warned, "Don't forget to reserve the hotel rooms and rental cars for your return in five days." That evening went smoothly, but the next morning would prove to be a different story.

We arrived at the field two hours before our scheduled takeoff. (The second aircraft would fly one more mission, then follow us that evening.) Brief and preflight were no problems, but the weather en route was marginal. The weather-guesser, an Italian civilian (there is no military weather info available at Bari), estimated 2,000-foot ceilings en route and about 3 miles visibility.

I took his briefing, filed my VFR flight plan and headed to the aircraft. The OinC was my copilot, and a former NATOPS Officer. We had each flown the route a dozen times, with better and worse forecasts. We discussed the weather, briefed the crew, manned up and took responsibility for the safety of the crew and 21 passengers.

Coming out of the ATA, ceilings were around 1,500 feet and visibility was at least 5 miles. We started toward our first checkpoint, Matera, a small town on a rocky hill about 25 miles to the south. Approaching the town, the ceiling came down to less than 1,000 feet, but the visibility stayed fairly good as long as we avoided the intermittent rain.

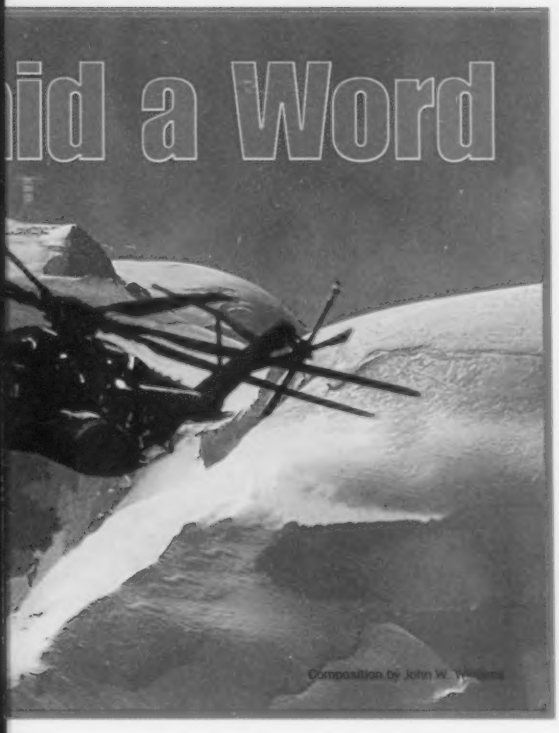
After Matera, the route dropped into a valley and followed a road to the Gulf of Taranto. We expected the ceiling to improve with the drop in ground level, but it did exactly the opposite. As we came over the crest of a ridge and passed by Matera, the ceiling dropped rapidly, and so did we. Within a minute, we had come down to nearly 200 feet on our radar altimeter and slowed to 60 knots as the visibility reduced to less than half a mile. We could see the ground and the road, but we were definitely IMC. Then, the road ended. Ooops, wrong road.

I thought, "Right about now would be a good time to climb and pick up radar contact."

We were already talking to Gioia, 15 miles to the east. My copilot was thinking the same thing I was. Even the crew chief, with more hours in 53s than either of his two pilots, was thinking the same thing.

Nobody said a word.

I looked to the right. Level at one o'clock, I saw three big red and white stripes on a power-line support stanchion, as well as the power lines. That was way too close.



My copilot yelled, "Power lines! Power lines! Climb!" I did. I jerked the helicopter 10 degrees nose up, pulled 103 percent torque, and rolled into a 15-degree left bank. I also scared the hell out of my crew, my pax and myself. This combination rocketed a nearly empty MH-53E into a 2,000-fpm rate of climb and gave my copilot vertigo.

He said, "Gauges, get on the gauges!" over and over again. I transitioned to the gauges, leveled the wings and passing through 40 KIAS, lowered the nose to the horizon and slowly, very slowly, began to pick up airspeed.

After about 30 seconds and a climb of 800 feet, I eased off the power and convinced the crew we were OK. We climbed to 4,000 feet, VFR on top, and continued home without further incident.

During the brief, my copilot and I had discussed the weather. We both brought up the fact that forecast ceilings in this area were notoriously fallible. But we hadn't discussed an alternate route. Our familiarity with the area gave us a false sense of security. Had we planned out an alternate routing or the possibility of VFR on top, we might have decided to climb much earlier.

We had the navigational equipment to pursue either of these alternate courses, but our misplaced confidence kept us from making any changes. When the weather did not progress as forecast, we continued with a situation we were no longer comfortable with.

Get-home-itis probably played a part as well. We have all briefed the insidious effects of this condition. Yet we never discussed it in our brief (it's penciled into my checklist now). We had the perceived pressure of making a hard arrival time and the desire to get home and catch up with all the little things we had left unfinished before going on detachment. These things pushed us to get back to Sigonella. Even if we had discussed them, we still would have gone flying that day. We just might have had a few more options in mind.

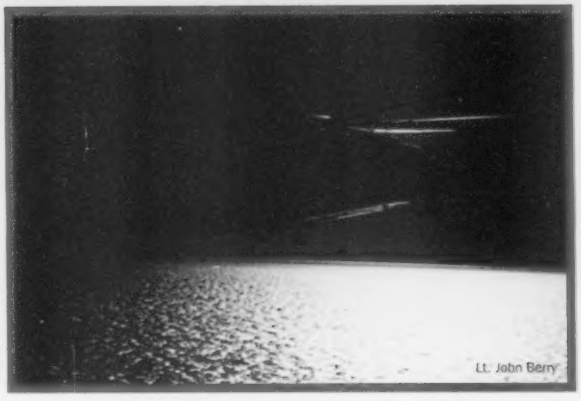
The lessons above are important. But none of them would have kept us from starting that flight in exactly the same manner. The real problems occurred in our cockpit in the minute between "less than 1,000 and moderate visibility" and "less than 500 and 1." First, the HAC (pronounced "I") failed to make a timely decision. During the brief, I said, "Weather abort will be five hundred and one." When the weather fell below that criteria, I hesitated rather than following the decision I had made before launch. I should have climbed and picked up radar control.

The other problem? Three experienced aircrewmen failed to voice their concerns that this flight was no longer safe. If any one of us had said what was on our minds, the whole incident might never have happened.

Lt. Moss flew with HC-4. He is now assigned to the Navy Postgraduate School.

Going In at Deadman's Lake

by Capt. Daniel R. Oskar



I HAVE ALWAYS WONDERED how an aircrew could fly a perfectly good aircraft into the ground or water. During CAX 3/4-94, I found out.

I was scheduled as the HAC for a night, external hop at Deadman's Lake with two copilots, both designated HACs themselves, wearing NVGs. We would make an external initial writeoff (which consisted of five unaided lifts) and an NVG external update. The night's weather was severe clear for the 1.5-hour low-light hop.

We also had a special reenlistment in the air to do first.

We conducted our ODO and cockpit briefs and briefed with the helicopter support team (HST). HST planned on using chemlights to form an inverted Y to light the LZ. We launched with NVGs, intending to degoggle on deck at an outlying field after we let the reenlistee out, before beginning the required unaided external lifts.

We flew toward Deadman's Lake with NVGs at maximum gain, as evidenced by the sparkling green image. We landed and the reenlistee jumped out. We raised our goggles and took off. Before we deployed the pendant, we decided to make one more circuit of the pattern to identify reference points for the final approach.

When we were comfortable, we called the support team and told them we would be picking up a load on the next pass. The crew chief positioned himself by the hell hole in preparation for the lift, and we turned downwind. The copilot was at the controls and was flying a solid basic-airwork pattern.

We reached the 180 and began our turn. At the 90, we were indicating 60 KIAS and 200 AGL. The copilot announced he could not see the zone. I stopped my litany of airspeeds and altitudes and looked across the cockpit to see if I could help him acquire it. While both of us were peering intently into the darkness, no one was paying attention to the instruments. After a couple of seconds of scanning outside, I heard the LAWS tone in my headset. I thought that was odd. I looked at the gauges, and felt a rush of adrenalin. My radar altimeter was set at 100 feet, but was passing 75 feet. We were showing an 800-fpm rate of descent and 60 KIAS.

I called for power, and at that same instant, the crew chief—face down in the hell hole—yelled, "Power, power, power!"

As the radar altimeter continued to plummet, I took the controls. I pulled power to the torque horns, yanked the cyclic back into my lap, and leveled the wings. My last view of the radar altimeter showed us below 25 feet and still winding down. I had a sickening feeling as I waited for the impact I knew was coming.

I don't know how close we came to tying the low-altitude record, but the crew chief got sand in his eyes through the hell hole. The support team called, wondering what we were doing as they watched our anti-collision lights soar through 1,200 feet.

About this time, the copilot announced, "This is stupid," and flipped down his goggles. I agreed and told the crew chief and aerial observer to use their goggles. I then passed the controls, put on my goggles, and we droned around the pattern a couple of times trying to get our hearts started again.

The remainder of the hop was uneventful, except for the fact that the non-flying pilot sounded like an auctioneer calling off airspeed and altitude. We nearly bought the farm because of a breakdown in crew coordination. Thanks to the LAWS system, all of us are still here to tell the story.

As a result of this experience, I have learned to outline aircrew responsibilities in both the NATOPS and crew coordination briefs, in much more detail. It only takes a moment of inattention to become a statistic.

Capt. Oskar flew with HMM-264. He is now an instructor with VT-2.

LESSONS LEARNED

There are two ways to get smart. One is through experience – we call this "the hard way." The other is to learn through others' experiences. The second method is much easier on our machines and bodies.

Reduced G Tolerance and the Push-Pull Effect

by LCdr. Lynn Tawney and Capt. Jeff Jaques, CAF

DURING A ROCKET ATTACK, a pilot pulled 5.5 Gs when he recovered from a 30-degree dive. As his aircraft approached 15 degrees nose-up, he experienced G-induced loss of consciousness (GLOC). After about 10 seconds, he regained consciousness but couldn't see.

The disoriented pilot thought the aircraft was in a nose-high climb and started a roll toward what he believed was the horizon. Moments later, his vision returned. He regained control of his aircraft and landed safely at home base.

Many factors, such as dehydration, heat, physical exhaustion, fatigue, and illness, can reduce tolerance to G forces. Flight physiologists have recently verified that a relatively new phenomenon, called the "push-pull effect," will temporarily lower aircrew tolerance to Gs. In fact, the push-pull effect, may have been the reason for this GLOC incident.

The push-pull effect results from an aviator's reduced ablity to combat the effects of positive G following flight maneuvers of less than 1 G. This phenomenon has reduced the G tolerance of aircrew wearing G-suits to as low as 3 Gs. This hazard can affect aircrew of many types of aircraft.

The push-pull effect is officially known as bunt bradycardia, the body's inability to maintain blood flow to the brain because the body has slowed its heart rate. When aircrew are exposed to less than 1-G flight (the push), blood flow to the head increases and subsequently blood pressure at the brain increases. After three seconds in this condition, the body instinctively tries to lower blood pressure at the brain by reducing blood flow to the head. When this happens, the body's tolerance to positive Gs (the pull) is greatly reduced if Gs are applied within eight seconds.

The push-pull phenomenon has been verified during parabolic flight in NASA's KC-135 aircraft and during recent centrifuge studies. It was the most likely cause of two recent Class A flight mishaps in which aircrew GLOC was suspected. The mishap aircraft were observed pushing less than 1 G before starting high-G turns. The aircraft stopped turning and continued without maneuvering straight into the ground.

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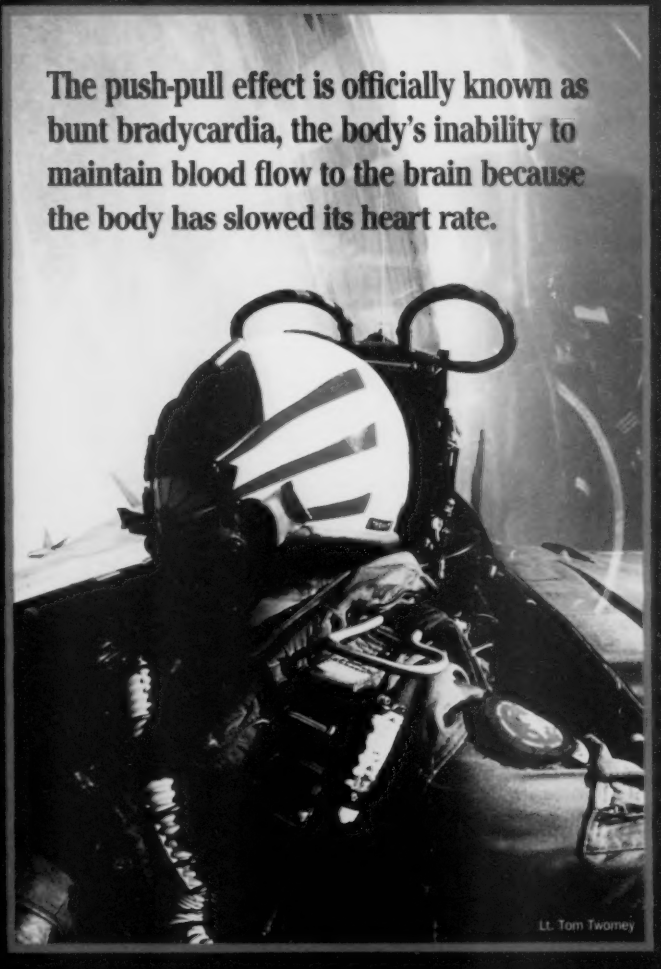

Lt. Tom Twomey

Lessons Learned:

1. The push (flight below 1 G) lowers aircrew tolerance to the pull (positive G maneuvers). High negative-G is not needed to slow the heart rate; slightly less than 1 G will cause this reaction.

2. It only takes three to four seconds at less than 1 G for the phenomenon to occur. Unloading or bunting for less than three seconds should not trigger the effect.

3. Aircrew wearing G-suits have experienced GLOC as low as 3 Gs.

4. The beneficial effects of a G warm-up maneuver can be erased by flight below 1 G for more than three seconds.

LCdr. Tawney and Capt. Jaques are FA-18 analysts in the Aircraft Operations Division, Naval Safety Center.